

# LSU Football

Graduating Champions

## About Louisiana State University Football

The LSU Tigers football program represents Louisiana State University in college football. The Tigers compete in the Football Bowl Subdivision (FBS) of the National Collegiate Athletic Association (NCAA) and the Western Division of the Southeastern Conference (SEC). LSU ranks 11th best in winning percentage in NCAA Division I FBS history and claims four National Championships (1958, 2003, 2007, and 2019), 16 conference championships, and 39 consensus All-Americans. Scott Kuehn is LSU football's Manager of Applied Sport Science.



### Opportunity

LSU football saw the potential to bring together performance, wellness, and availability information in a unified athlete management system (AMS). Doing so could help the team fulfill its ultimate mission of graduating champions via a “process over outcome” approach to maximize player availability and preparedness. Centralizing player information and presenting it in an easily understandable way also supports decision-making processes by key stakeholders throughout the organization to better quantify the KPIs underpinning the ultimate mission.



### Challenge

LSU football had a lot of disparate data streams coming from various devices and systems and each had their own proprietary interface, making it difficult to look at the big picture of player performance and wellness. Manually processing this data in Excel spreadsheets was time-consuming and delayed the availability of this information, making it less actionable. To successfully engage coaches and athletes, the sport science team needed a way to create personalized, easy-to-digest, visual representations of the data.



### Solution

LSU football is using Smartabase to proactively manage players' load via GPS and performance assessments conducted via force plates, speed gates, and strength and imbalance testing systems. Wellness surveys enable the sport science team to monitor physical and mental wellbeing, while smart scales provide simple, tailored hydration recommendations. Dashboards improve accountability and engagement with current players and recruits and empower coaches to optimize practice planning.



### Impact

During camp, LSU football reduced its rate of season-ending and serious injuries by 80 to 90 percent. The team has seen performance improvements in speed and velocity, driven by greater player engagement in the training process. Athletes have also taken greater responsibility for their nutrition, hydration, sleep, and other aspects of wellness. Data visualization is enabling coaches and staff to make quicker and more informed decisions, while automated data processing gives the sport science team more time for relationship building.



# The Opportunity



*The next frontier with all these data streams is to help make better and more informed decisions going forward and understanding the potential outcomes of these decisions prior to making them. Data is never going to be the ultimate decision maker; it's going to be a decision influencer.*

*- Scott Kuehn, Manager of Applied Sport Science, LSU Football*



At LSU football, every activity is driven by Coach Brian Kelly's commitment to graduating champions through a holistic total preparatory approach. Under the directive of Director of Athletic Development Jake Flint, it was imperative that the applied sport science department under Scott Kuehn aligned with that vision. "We started using the lens of wanting to win a national championship, extending our head coach's mission to graduate champions, and putting players in the best position possible to optimize their health, wellness, and performance to achieve those outcomes," Kuehn said.

To achieve these goals, Kuehn recognized the need to bring together data from force plates, speed gates, a GPS system, wellness trackers, and other technology in a single athlete management system (AMS) like Smartabase. It could then be aggregated, reported on, and visualized for coaches, athletes, and other stakeholders. "Smartabase is all about centralizing the various streams of athlete data and creating a higher level of synchronicity throughout the organization as to what's occurring with them and how we need to proceed going forward."



# The Challenge



*There's been an arms race in who can accumulate the most technology. A lot of it was keeping up with the Joneses and making sure that during recruiting if someone asked, 'Do you have a GPS system?' you didn't say 'no' and have that be a reason they didn't commit to your school. But just having this technology without action upon it doesn't do anything.*



As with many elite college programs, LSU football has access to an ever-increasing number of devices to gather player data on the field and in the weight room. While the aim is to derive greater insights into athlete performance and wellness, the numbers alone don't tell the full story, particularly when they're stuck in separate locations. It was challenging to make disparate data usable to coaching, performance, and medical staff without using time-consuming manual processes or asking them to access multiple systems. "You have to go to one website to see one stream of data and a second site to see another," Kuehn said. "They all have vendors' preset interfaces, different navigation functionality, and paint these data

streams in a very siloed light, which is the exact opposite to the environment they occur in."

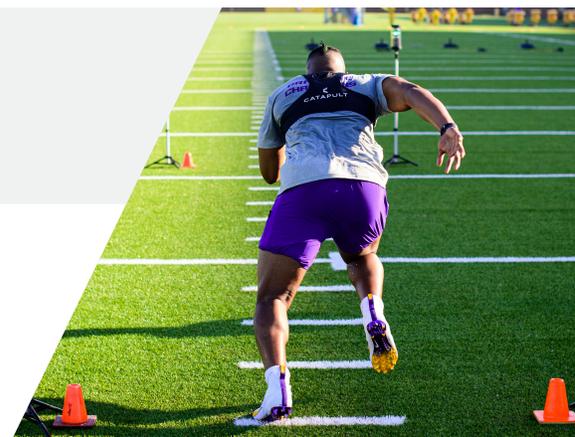
In addition to the manual process to consolidate the data, it was difficult to present the information in a meaningful way to the different stakeholders. An AT, dietitian, or performance coach has different needs and understanding of the data than a sport coach or an athlete. It was important to find a way to efficiently and effectively present the data and insights to these different audiences in a way that made sense to them.



# The Solution



*The entire staff has access to the same dashboards in Smartabase. There's complete transparency across the program and everything that's in Smartabase aligns with what's broadcast publicly throughout the building. It's gotten everybody on the exact same page about what's going on.*



From engaging with recruits to educating current players to informing coaches, LSU football is relying on Smartabase. With the ability to capture performance, health, and wellness data, present it in a simple way, and allow authorized users to dig deeper when needed, Smartabase has become the go-to data hub for the entire program.

## Player Profiling & Load Management

Recruiting four- and five-star players is becoming ever more competitive, even for a program with such a rich pedigree as LSU, which is why presenting live data during campus visits is so compelling. "One of the big pieces we show in recruiting pitches is a player dashboard, which centralizes all of our athletes' data in a kind of Madden profile that they can access," Kuehn said. "It creates a picture of how we're going to develop you here, the data points that are important, and how we'll track you over the long term to show where you're getting better. They do some speed training, and we kick their peak velocity back to them. They're going to be thinking, 'Oh man, I'm only half a second away from Ja'Marr Chase.' They haven't seen anything like what we're doing with Smartabase on their other visits. It helps us stand out as an athletic development department."

Players also have access to their profile through the athlete app, allowing them to view the same biometric and performance data as the coaching staff sees, and get instant feedback after games, practices, and training sessions. "We built an in-season Smartabase dashboard that provides a one-stop, 30,000-foot level view of all the key KPIs we want to look at daily during the season," Kuehn said. Moving forward, Smartabase will inform LSU's "budget" system, which puts tactical periodization in layman's terms to simplify and personalize week-to-week load management and practice planning.



## Player Wellness

Objective data provides powerful indicators about player performance and wellbeing. LSU football decided that athletes' subjective assessments would give even greater context, and so created a shorter version of the Hooper-Mackinnon survey for players to fill out in Smartabase on every football activity day.

"One of the most important pillars for Coach Kelly in terms of positive habit formation is the wellness questionnaire," Kuehn said. "If someone is below a certain score on their wellness survey, they flag automatically, and we can click to see where this flag is coming from. For a lot of guys, it's their sleep, so that becomes an intervention point for where we can give them some strategies. With the stress, mood, and sleep questions, we get part of the mental health piece as well and can better sniff out if there is something going on."



## Hydration

It's hard to keep football players hydrated, particularly when they're participating in camps and practices during summer heat and humidity. That's why LSU football decided to implement Bluetooth-enabled smart scales that are connected to Smartabase. Athletes weigh themselves before and after each practice and get personalized recommendations for rehydration.

"I built everything out on the back end with our dietitian, so they get feedback on the scale that tells them exactly what they need from a hydration standpoint. It doesn't put it in fluid ounces but says, 'You need three glasses and four electrolyte packets before you go,'" Kuehn said. "We're eliminating the need for them to do the math of how many cups 40 fluid ounces is - it's meeting them where they're at, and now they know what Dr. Matt Frakes recommends, it's on them to do it."



## Player Accountability

To increase player motivation and buy-in, LSU football runs a S.W.A.T. (spring/summer/in-season workout accountability team) program, in which athletes gain or lose points for weight training, on-field sessions, academics, and discipline domains. Once the numbers are entered into Smartabase, it aggregates them and presents the results in a convenient graphical format, rather than intern Jordan Pennella painstakingly compiling a 40-page report.

"Now we have an automated Smartabase dashboard, we simply send an email to the coaches to let them know that the S.W.A.T. report is ready for this week," Kuehn said. "The players have full ownership of their data so if they're below the line for last week, they can log into the athlete app, click on a graph in their S.W.A.T. dashboard and see what they gained and lost points for. You can be a workout warrior, but if you're not going to class and handling your business away from here, that's going to be much more detrimental than the positive points will be impactful."

## Diagnostic Testing and Injury Management

LSU football regularly performs physical screens on its players to assess neuromuscular readiness, strength and power output, and imbalance. The results are collated in Smartabase through integrations with VALD ForceDecks and NordBord. If there's a decline in output or an increase in an asymmetry, the system flags the player so that staff can intervene if necessary.

"We have to stress players and push them hard and there are going to be decrements in their performance," Kuehn said. "But at the right times, we need to be able to bring them back so that they can perform their best when it matters most. Being able to visualize that in Smartabase allows us to stay ahead of the curve and catch guys as they're starting to trend down rather than when an injury has already occurred. It has been very helpful for us in terms of understanding the stress we've imposed on the athletes and how their bodies are responding."

Displaying information from these systems and VALD SmartSpeed timing gates in a Smartabase dashboard also gets players more involved in their development. "They're seeing their data right away, competing with each other on how fast they're running, and we're putting their NordBord and ForceDecks scores in terms of NFL percentiles at their position," Kuehn said. "Now they have a rabbit to chase, and it's driving more intent towards their training. We saw some great speed improvements during the offseason."



# The Impact



*Throughout the year, we've seen a vast improvement in how deliberate players are towards the preparatory process. And a huge part of that is we can now give them back information really quickly and allow them to take ownership of it. This has only enhanced the results we've gotten.*



Football isn't just a job in the SEC – it's a 24/7 mission. The LSU coaching staff's myriad responsibilities mean that there's no time to lose. This makes it essential that performance data is readily available in an easily digestible format. "Coaches have recruiting, compliance, game and practice planning, academics – there's so much going on for them," Kuehn said. "We want them to be able to make very quick and informed decisions. If they spend two minutes looking at a Smartabase dashboard, they can understand exactly where their guys are at and have that in the back of their heads when they're deciding on practice reps."

With player workload, physical screening results, and other performance and wellness information at their fingertips in Smartabase, LSU football's coaching staff was able to make data-informed decisions during camp. This helped safeguard player health and minimized the time athletes spent on the sideline.

"There was somewhere north of an 80 to 90% reduction in either season-ending or significant time loss injuries during camp, which speaks to the importance of player availability," Kuehn said. "It was a collaborative effort of a lot of people, being more sensible with the workloads going into camp, having better preparatory efforts in terms of performance training, diagnostic testing, nutrition, and putting an emphasis on lifestyle habits."

Combining Smartabase with scales to deliver instant rehydration guidance also had a noticeable impact on player health. "There was a very minimal decrement in the body weights that we saw

from the first day of camp to the end of it," Kuehn said. "This was a combination of how players were refueling, what they ate, and how they hydrated and took care of themselves post-practice."

The ability to give data back to athletes in a way that they can understand and act upon has also proved pivotal for LSU football in getting players to buy into their training and the team's overall goals. "Leading into the season, we've been able to quantify that players are getting better. Then we show them the trend of all the hard work they've put in and the results it has led to," Kuehn said. "We incorporate subjective feedback from players saying how in shape they are and how much better they feel going through camp. They also notice that there aren't a lot of hurt bodies around them. It all continues to feed back into the system and shows that this is working: we're improving, we're healthier, and we're happier."

The ability to tailor information to coaching, medical, and performance staff in a single, unified platform so that they can quickly grasp takeaways and put them into action has been a game changer. "All the objective and subjective appraisals have spoken to the same thing: Smartabase has been the centralizing piece for us," Kuehn said. "It has allowed us to spend more time on relationships, and we're making sure that we build out this sport science ecosystem the right way, so everything is digestible for all the stakeholders and departments. The biggest benefit is that everyone has the ability to come into a system like this and get out of it exactly what they need relative to their role because it's so customizable."

## About

 **SMARTABASE**

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A global company founded in Brisbane, Australia in 2003 with international headquarters in Colorado and London, Smartabase is a global leader in using data to optimize human performance. As a performance and analytics platform, Smartabase is the source of truth for national sporting federations, Olympic committees, many of the world's highest-profile sporting teams, military research and operational wings, and performing arts organizations. For more information, contact us at [sales@fusionsport.com](mailto:sales@fusionsport.com).